

**First Five-Year Review Report
for
Redwing Carriers, Inc. (Saraland) Superfund Site
Saraland, Mobile County, Alabama**

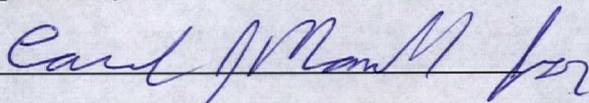
September 2014

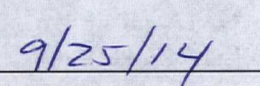


United States Environmental Protection Agency
Region 4
Atlanta, Georgia

Approved by:

Date:

A handwritten signature in blue ink, appearing to read "Randall Chaffins", is written over a horizontal line.

A handwritten date "9/25/14" in blue ink is written over a horizontal line.

Randall Chaffins
Acting Director, Superfund Division



**First Five-Year Review Report
for
Redwing Carriers, Inc.
527 U.S. Highway 43
Saraland
Mobile County, Alabama**

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List of Acronyms

ADEM	Alabama Department of Environmental Management
ARAR	Applicable or Relevant and Appropriate Requirement
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
CIC	Community Involvement Coordinator
COC	Contaminant of Concern
EPA	United States Environmental Protection Agency
ESD	Explanation of Significant Difference
FYR	Five-Year Review
HUD	United States Department of Housing and Development
µg/L	micrograms per liter
MCL	Maximum Contaminant Level
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
O&M	Operation and Maintenance
OU	Operable Unit
PAH	Polycyclic Aromatic Hydrocarbon
PRP	Potentially Responsible Party
RA	Remedial Action
RAO	Remedial Action Objective
RCRA	Resource Conservation and Recovery Act
ROD	Record of Decision
RPM	Remedial Project Manager
TLM	Tar Like Material
UU/UE	Unlimited Use and Unrestricted Exposure
VOC	Volatile Organic Compound

Executive Summary

The Redwing Carrier, Inc. Superfund site (the Site) is 5.1 acres in size and is located in the City of Saraland, Mobile County, Alabama. The Site is bounded to the east by U.S. Highway 43 and a skating rink. On the north it is bounded by a United Gas Pipe Line easement with a residential development south of the easement. The Site is bounded on the north by a trailer park, and on the west by an undeveloped lot. The Site was the former location of the Saraland Apartment Complex (Apartments) that has since been demolished to allow for the complete remediation of the site.

From 1961 to 1971, Redwing Carriers, Inc. (Redwing), a trucking company, owned and operated the Site as a terminal for cleaning, repairing, and parking its fleet of trucks. The company transported a variety of substances, including asphalt, diesel fuel, chemicals, and pesticides from local plants. Redwing discharged untreated hazardous substances to the ground during the cleaning of tanker trucks, creating a tar-like sludge and contaminating Site soils. The tar-like sludge was composed predominately of polycyclic aromatic hydrocarbon compounds together with lesser amounts of pesticides, herbicides and volatile organic compounds. These operations resulted in contamination of soils, ground water and sediment.

The United States Environmental Protection Agency (EPA) placed the Site on the National Priorities List (NPL) on February 21, 1990.

EPA selected the remedy in the 1992 Record of Decision (ROD) and updated the remedy in 2000. The ROD states that the remedial action objectives (RAOs) include:

- Prevent migration of contaminated ground water.
- Prevent human exposure to contaminated soils, sediments and sludge.
- Permanently reduce the toxicity of the harmful constituents in all media.
- Prevent migration of site contaminants via drainage pathways.

The remedy consists of:

- Removal of the surface soil, subsurface soil and sediments until the remaining soil is below the remedial levels established in the ROD.
- Off-site disposal in a Resource Conservation and Recovery Act (RCRA) Subtitle D landfill for soils and sediments that are excavated.
- Treatment of soils and sediments by incineration at the RCRA Subtitle D landfill.
- Removal of all buildings, foundations and paving to allow for removal of soils beneath the buildings.
- Reconstitution of the ground water monitoring program at the Site after the backfilling and regrading of excavated areas had been completed. The ground water monitoring program included sampling to establish baseline conditions at the Site and quarterly ground water monitoring for up to three years to determine the effectiveness of the source material excavation in reducing surficial ground water contamination.

The remedy at the Site is protective of human health and the environment because the surface soil, subsurface soil, sediment and ground water at the Site met performance standards established in the RODs and the Explanation of Significant Difference (ESD).

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site Name: Redwing Carriers, Inc. (Saraland)		
EPA ID: ALD980844385		
Region: 4	State: AL	City/County: Saraland/ Mobile County
SITE STATUS		
NPL Status: NPL		
Multiple OUs? No	Has the site achieved construction completion? Yes	
REVIEW STATUS		
Lead agency: EPA If "Other Federal Agency" selected above, enter Agency name: Click here to enter text.		
Author name: Shelby Johnston, EPA		
Author affiliation: Site RPM		
Review period: 8/25/2014 – 9/02/2014		
Date of site inspection: N/A		
Type of review: Policy		
Review number: 1		
Triggering action date: 9/02/2009		
Due date (five years after triggering action date): 9/02/2014		

Five-Year Review Summary Form (continued)

Protectiveness Statement(s)

Operable Unit:
OU1

Protectiveness Determination:
Protective

Addendum Due Date
(if applicable):
Click here to enter date.

Protectiveness Statement:

The remedy at the Site is protective of human health and the environment because the surface soil, subsurface soil, sediment and ground water at the Site met performance standards established in the RODs and the ESD.

Environmental Indicators

- Current human exposures at the Site are under control.
- Current ground water migration is under control.

Are Necessary Institutional Controls in Place?

☒ All ☐ Some ☐ None

No institutional Controls are necessary.

Has EPA Designated the Site as Sitewide Ready for Anticipated Use?

☒ Yes ☐ No

Has the Site Been Put into Reuse?

☐ Yes ☒ No

First Five-Year Review Report for Redwing Carrier, Inc. Superfund Site

1.0 Introduction

The purpose of a five-year review (FYR) is to evaluate the implementation and performance of a remedy in order to determine if the remedy will continue to be protective of human health and the environment. FYR reports document FYR methods, findings and conclusions. In addition, FYR reports identify issues found during the review, if any, and document recommendations to address them.

EPA prepares FYRs pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Section 121 and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). CERCLA Section 121 states:

If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each 5 years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.

EPA interpreted this requirement further in the NCP, 40 Code of Federal Regulations (CFR) Section 300.430(f)(4)(ii), which states:

If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after initiation of the selected remedial action.

The assigned EPA Region 4 Remedial Project Manager (RPM) conducted the FYR and prepared this report regarding the remedy implemented at the Site in Saraland, Mobile County, Alabama. The RPM conducted this FYR from August to September 2014. EPA is the lead agency for developing and implementing the remedy for the potentially responsible party (PRP)-financed cleanup at the Site. The Alabama Department of Environmental Management (ADEM), as the support agency representing the State of Alabama, has reviewed all supporting documentation and provided input to EPA during the FYR process.

This is the first FYR for the Site. The triggering action for this policy review was the signing of the Preliminary Closeout Report on September 3, 2009. No hazardous substances, pollutants or contaminants remain at the Site above levels allowing for unlimited use and unrestricted

exposure, however it is the policy of EPA to conduct a policy review on all sites which will require five or more years to complete. The Site consists of one operable unit (OU).

2.0 Site Chronology

Table 1 lists the dates of important events for the Site.

Table 1: Chronology of Site Events

Event	Date
Site Operated as a Truck Terminal	1961- 1971
Property sold to Harrington, Inc.	May 1971
Saraland Apartments Ltd. Purchased the Site and constructed a U.S. Housing and Urban Development apartment complex on-site.	1973
ADEM investigation of Tar-like material (TLM)	1984
First Administrative Order on Consent (AOC) with trucking company for removal of visible TLM	July 1985
EPA listed site on NPL	February 21, 1990
PRPs and EPA signed a second AOC to conduct the remedial investigation and feasibility study	June 1990
remedial investigation and feasibility study completed	July 1992
EPA signed Record of Decision (ROD)	December 1992
First UAO to trucking company and nine (9) other PRPs	August 1993
First RD field work completed	March 1994
First 90% design completed	May 1995
Second UAO to remove tar seeps	July 1995
START Contractor and TAT Contractor assigned by EPA	March 1996
Initial removal action underway	October 1996
PRP contractor prepares and presents FFS and Second Look Remedy	1997-1999
ROD amended based on Second Look Remedy	June 14, 2000
SOW agreed upon and approved	2000
Remedial Design Initiated	2002
Buildings and Facilities Demolition	Spring 2004
Final RD Work Plan Approved	April 2005
Pre-Design Complete	December 2005
Remedial Design Approved by EPA	June 28, 2007
RA Contractor selected	August 2007
EPA issued an ESD for the Site to revise several ground water cleanup levels	September 25, 2007
RA Initiated	December 2007
RA Field Work Completed	June 2008
Final RA inspection by EPA and ADEM	September 5, 2008
Final Ground water monitoring Program Established	March 2009
EPA Signed the Preliminary Closeout Report	September 3, 2009
Final Ground water Monitoring Event Completed	August 2012
All Remaining Monitoring Wells Abandoned	February 2013
Final Remedial Action Report Submitted	April 2013
First Five Year Review due	September 2014

3.0 Background

3.1 Physical Characteristics

The Site is located at 527 U.S. Highway 43, Saraland, Mobile County, Alabama (Figure 1). The Site was the location of the former Apartment Complex. The residents of the Apartments were permanently relocated and the Apartments have since been demolished to allow for the complete remediation of the Site and a drainage ditch. The Site is bounded to the east by U.S. Highway 43 and a skating rink. On the north it is bounded by a United Gas Pipe Line easement with a residential development south of the easement. The Site is bounded on the north by a trailer park, and on the west by an undeveloped lot.

Figure 1: Site Location Map

Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding EPA's response actions at the Site.

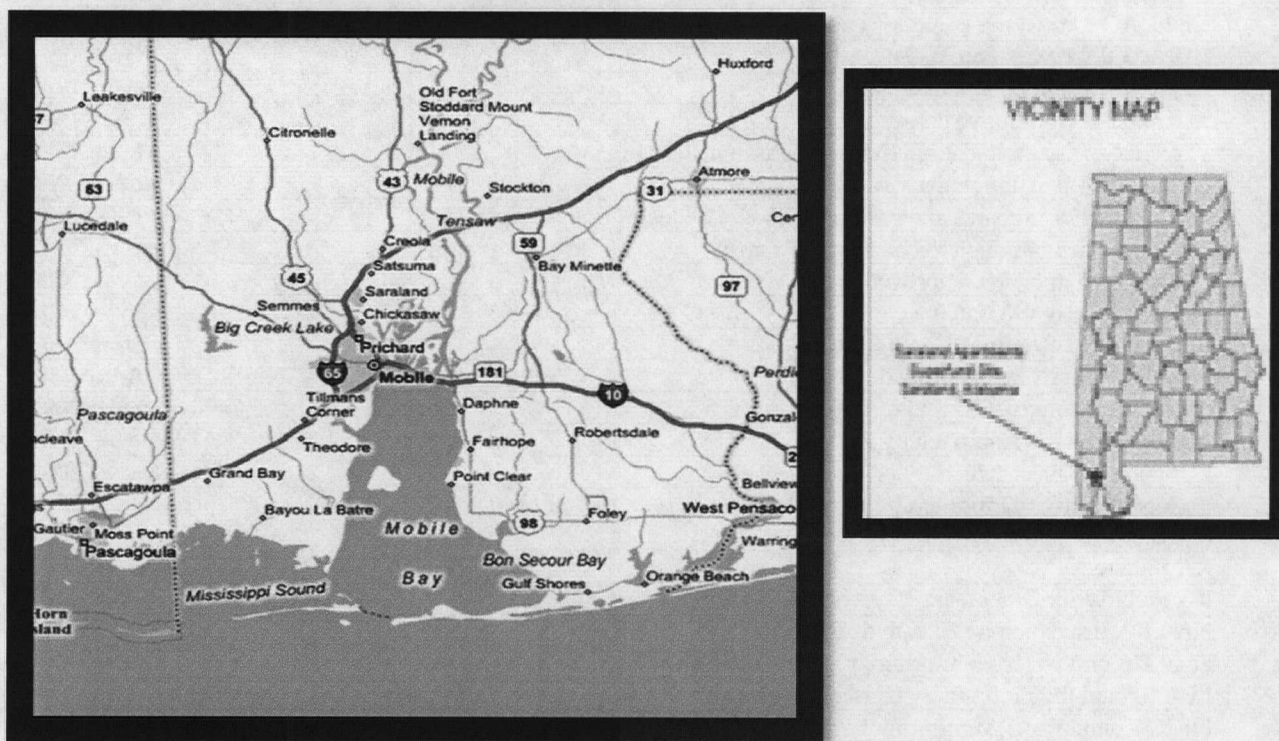
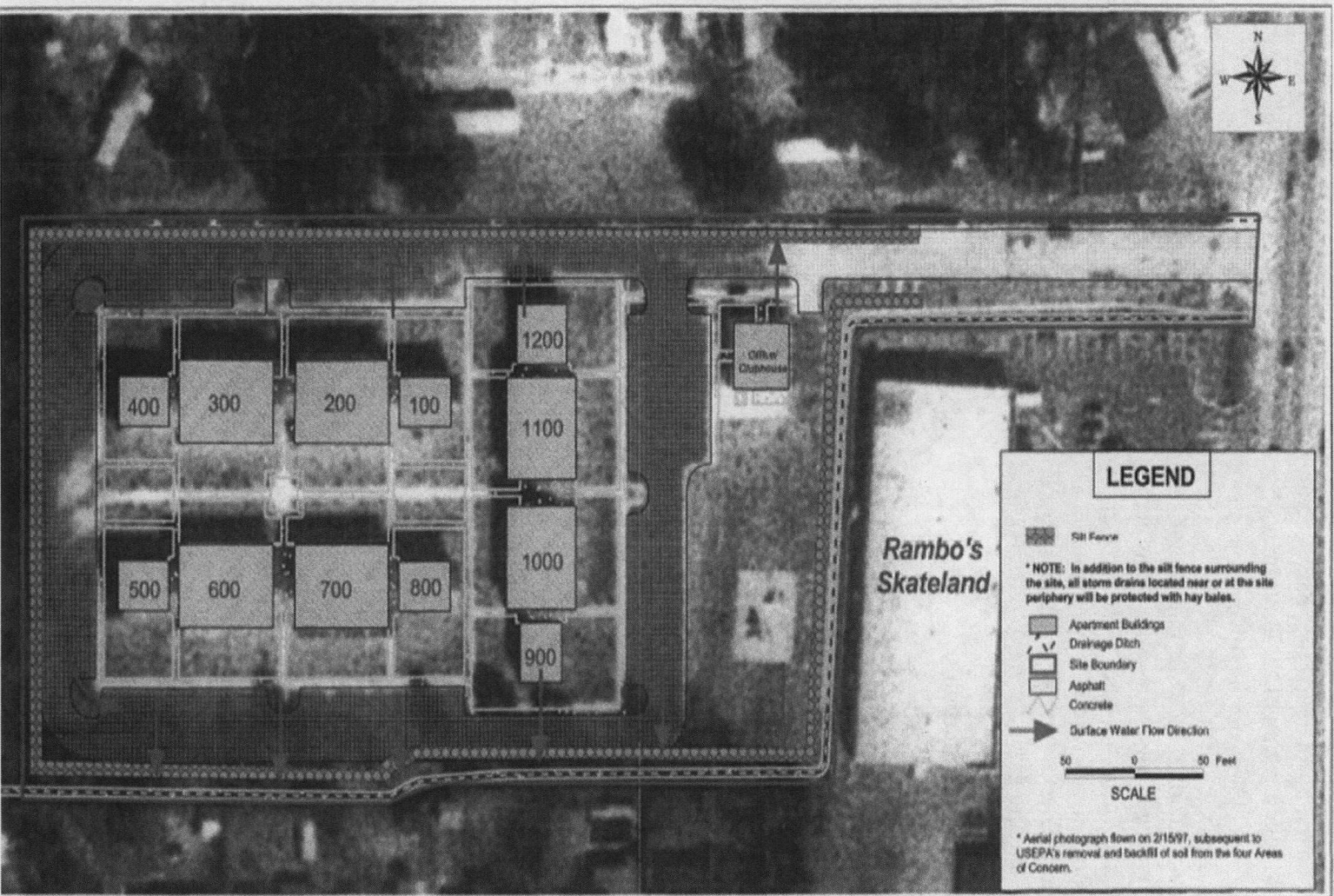


Figure 2: Detailed Site Map

Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding EPA's response actions at the Site.



3.2 Land and Resource Use

The Site is located in the City of Saraland, Mobile County, Alabama and is bounded to the east by U.S. Highway 43 and a skating rink. On the north it is bounded by a United Gas Pipe Line easement with a residential development south of the easement. The Site is bounded on the north by a trailer park, and on the west by an undeveloped lot. The Site was the former location of the Apartments have since been demolished to allow for the complete remediation of the Site.

The Site is underlain by strata that comprise the Alluvial Aquifer of Mobile County. Two distinct hydrogeologic units were identified from four strata underlying the Redwing Site. The designations assigned to these three units are as follows: (1) a Low Permeability Unit and (2) the Alluvial Aquifer (lower sands). The Alluvial Aquifer is considered a Class IIA ground water as it is a current source of drinking water. The first aquifer beneath the Site is where the ground water protection levels will apply is the Alluvial Aquifer.

3.3 History of Contamination

From 1961 to 1971, Redwing Carriers, Inc. (Redwing), a trucking company, owned and operated the Site as a terminal for cleaning, repairing, and parking its fleet of trucks. The firm transported a variety of substances, including asphalt, diesel fuel, chemicals, and pesticides from local plants. During cleaning, untreated hazardous substances were released to the ground creating a tar-like sludge and contaminating site soils. The tar-like sludge is composed predominately of polycyclic aromatic hydrocarbon compounds together with lesser amounts of pesticides, herbicides and volatile organic compounds.

3.4 Initial Response

In 1984, ADEM investigated apartment residents' complaints about the tar-like sludge seeping to the surface at numerous locations at the Site. In 1985, under Superfund removal authority, EPA conducted initial studies in which high concentrations of 1,2,4-trichlorobenzene and naphthalene were detected in the soil and in leachate coming from the sludge. On July 9, 1985, the Agency and Redwing entered into a removal Administrative Order on Consent which required Redwing to (among other things) conduct a limited sludge and contaminated soil removal.

The Site was placed on the National Priorities List (NPL) in February 1990. On December 15, 1992, EPA issued a Record of Decision for the Site (described in more detail below).

3.5 Basis for Taking Action

Redwing, under EPA's oversight, began field activities for the first phase of the remedial investigation in January 1991. The RI/FS was completed in July of 1992. During the investigation, 39 soil borings were collected with a total of 123 separate soil samples being analyzed. The substances found most frequently at concentrations above cleanup

levels fall into three major categories: 1) pesticides and herbicides; 2) Volatile organic compounds (VOCs) and Polycyclic Aromatic Hydrocarbons (PAHs). These substances were found in soils, ditch sediments and ground water across the Redwing Site. The highest levels of contamination were detected in the southern and eastern portions (the location of the former containment levee used by Redwing) and across areas of former terminal operations. Inorganic substances, which may occur in nature at significant levels, were also detected in soils, sludge and ground water. During this investigation EPA determined that the contaminants at the Site presented an unacceptable risk to human health. Redwing continued periodic removal of surface seeps until 1994, when they stopped doing any work at the Site.

On July 12, 1996, EPA issued a removal Unilateral Administrative Order to Redwing and Saraland Apartments, Ltd., directing them to remove the source of the recurring tar seeps. When both parties refused to comply with the order, EPA conducted a Removal Action which consisted of temporarily relocating 57 families living in the complex and excavating and transporting off Site for disposal approximately 20,724 tons of sludge, contaminated soil and debris.

Air monitoring conducted in the Saraland Apartments after the removal was completed and detected unacceptable levels of benzene and the pesticide Aldrin in some of the Saraland Apartments. Based on this monitoring, EPA determined that the residents could not return to live in the Saraland Apartments. Working together, EPA and HUD (United States Department of Housing and Development) relocated the residents to comparable permanent housing.

In July, 1997, EPA collected soil, sediment and water samples from twenty-three properties adjacent to the Redwing Site. The purpose of this sampling was to address community concerns about possible releases from the Site. Based on a risk evaluation of the analytical results of these samples, the Agency determined that there is no unacceptable health risk or hazard in the neighborhood adjacent to the Redwing Site.

4.0 Remedial Actions

In accordance with CERCLA and the NCP, the overriding goals for any remedial action are protection of human health and the environment and compliance with applicable or relevant and appropriate requirements (ARARs). A number of remedial alternatives were considered for the Site, and final selection was made based on an evaluation of each alternative against nine evaluation criteria that are specified in Section 300.430(e)(9)(iii) of the NCP. The nine criteria are:

1. Overall Protection of Human Health and the Environment
2. Compliance with ARARs
3. Long-Term Effectiveness and Permanence
4. Reduction of Toxicity, Mobility or Volume through Treatment
5. Short-Term Effectiveness
6. Implementability
7. Cost
8. State Acceptance
9. Community Acceptance

4.1 Remedy Selection

The Redwing Site ROD was signed on December 15, 1992. The major components of the 1992 selected remedy include:

- Excavation of sludge, sediments and contaminated soils.
- Off-site treatment/disposal of contaminated soils, sediments and sludge.
- Regrading and backfill of excavations using clean, compacted-fill material.
- Temporary and possibly permanent relocation of residents with the potential demolition of selected apartment units.
- On-site treatment of contaminated ground water in the surficial aquifer. Monitoring and possible withdrawal and treatment of ground water in the alluvial aquifer. Treatment of ground water for discharge to a Publicly Owned Treatment Works, or if unavailable, to a nearby surface water body.

The 1992 ROD was subsequently amended on June 14, 2000. The major components of the amended remedy were:

- Development of a phased approach to implement the amended remedy during the Remedial Design.
- Demolition, removal, and off-site disposal of all buildings, foundations, concrete walkways, asphalt driveways and parking areas.

- Excavation, off-site treatment and disposal of the remaining source material (sludge, sediments and contaminated soils) to aid in restoring and protecting ground water quality.
- Reconstitution of the ground water monitoring program at the Site after the backfilling and regrading of excavated areas had been completed.
- Postponement of the 1992 ROD requirement for on-site extraction and treatment of contaminated ground water and compliance monitoring. Implementation was to be contingent upon the results of the baseline ground water sampling and evaluation of the quarterly ground water monitoring data. Evaluation of the current remedial strategy would be achieved as a result of the removal of the source material.

On September 25, 2007, EPA issued an ESD for the Redwing Site. In the ESD, EPA revised the 1992 ROD subsurface soil cleanup levels for acetone, Aldrin, alpha-BHC, and Dieldrin.

The remedy at the Site is protective of human health and the environment because the surface soil, subsurface soil, sediment and ground water at the Site met performance standards established in the RODs and the Explanation of Significant Difference (ESD).

Table 2: Ground Water Cleanup Goals

Ground Water COCs	ROD Cleanup Goal* (micrograms per liter, µg/L)
4,4-DDT	0.158
Acetone	1,120
Aldrin	0.00317
Alpha-BHC	0.00855
Beryllium	4.00
Bis (2-Ethylhexyl) Phthalate	6.00
Caron Disulfide	47.6
Chloroform	100
Chromium	50
Dieldrin	0.00337
Gamma- BHC (Lindane)	0.2
Methylene Chloride	5
Nickel	100
Vanadium	78.1
Vernolate	11.2
*Based on Risk Assessment	

Table 3: Subsurface Soil Cleanup Goals

Subsurface soil COCs	ROD Cleanup Goal* (micrograms per liter, µg/L)
4,4'- DDT**	566
Acetone	453***
Aldrin	640,000***
Alpha-BHC	2.2***
Chloroform	70
Chromium	47,000
Dieldrin	81***
Gamma- BHC (Lindane)	3.2
Methylene Chloride	0.6
Nickel	30,000
Vanadium**	156,000
Vernolate	55
<p>*Cleanup levels are based on risk to ground water protection.</p> <p>** Concentrations of these site related contaminants were detected in the ground water during the RI but not above cleanup levels in the subsurface soils but contaminants were included post excavation confirmation sampling.</p> <p>***Cleanup goals updated by revised site specific risk assessment which was detailed in the 2007 ESD.</p>	

Table 4: Surface Soil and Sediment Cleanup Goals

Surface soil and Sediment COCs	ROD Cleanup Goal* (micrograms per liter, µg/L)
Benzo (A) Pyrene	94.9
Benzo (B) Fluoranthene	540
Benzo (A) Anthracene	1,025
Carbon Tetrachloride	9,590
Chrysene	362
*Based on risk from inhalation or ingestion.	

4.2 Remedy Implementation

EPA approved the Final Remedial Design on June 28, 2007. The Redwing PRP conducted the remedial action pursuant to the February 26, 2002 Remedial Design/Remedial Action Consent Decree. Site demolition activities started in March 2004 and were completed in June 2004. During the demolition, 5,700 cubic yards of

demolition debris were transported off-site for disposal and 3,915 cubic yards of asphalt and concrete were transported off-site for recycling.

The Final Remedial Design Report was approved on June 28, 2007. The Redwing Remedial Action (RA) started in mid-December 2007 and was completed in June 2008. During the RA, a total of 25,114 cubic yards of soil were excavated. Of this amount, approximately 21,375 cubic yards were transported off-site for disposal. The remaining soil, together with clean fill brought in from off-site, was used in backfilling and regrading excavated areas of the Site. Upon completion of site grading, grass seed was broadcast over the site to establish a grass cover.

After regrading and seeding activities were completed, six (6) monitoring wells were installed on-site and ground water samples were collected on September 5, 2008. The sampling detected vernolate in one monitoring well (MW-16) at a concentration above the ROD ground water cleanup. The monitoring wells were resampled in early December 2008 and vernolate was again detected in MW-16. It was determined that this well was installed near an area where soils containing unexpectedly high concentrations of vernolate were removed during the soil excavation phase of the RA. In response to the 2008 ground water sampling, three monitoring wells were installed on adjacent property in early April 2009 to determine if contaminated ground water has migrated off-site. Sampling results from these wells did not detect any contamination.

From September 2009 to August 2012, ground water samples were collected quarterly and exclusively from MW-16 and the three (3) off-site monitoring wells. In September 2012, EPA agreed that the ground water in these monitoring wells was below the ROD standard for all constituents and abandonment of the remaining monitoring wells for the Site was approved.

4.3 Operation and Maintenance (O&M)

There are no associated annual O&M costs as the Site meet the Remedial Goal Objectives and cleanup goals set forth in the decision documents.

5.0 Progress Since the Last Five-Year Review

This is the first FYR for the Site.

6.0 Five-Year Review Process

6.1 Administrative Components

EPA Region 4 initiated the FYR in August 2014 and scheduled its completion for September 2014. The EPA RPM Shelby Johnston led the EPA site review team, which also included the EPA site attorney Marianne Lodin and the EPA community involvement coordinator (CIC) Angela Miller. The review schedule established consisted of the following activities:

- Community notification.
- Document review.
- Data collection and review.
- FYR Report development and review.

6.2 Community Involvement

On September 5, 2014, EPA published a public notice in the Mobile Press Register newspaper announcing the commencement of the FYR process for the Site, providing contact information for Shelby Johnston and inviting community participation. The press notice is available in Appendix B. No one contacted EPA as a result of the advertisement.

EPA will make the final FYR Report available to the public. Upon completion of the FYR, EPA will place copies of the document in the designated site repository.

6.3 Document Review

ARARs Review

CERCLA Section 121(d)(1) requires that Superfund remedial actions attain “a degree of cleanup of hazardous substance, pollutants, and contaminants released into the environment and of control of further release at a minimum which assures protection of human health and the environment.” The remedial action must achieve a level of cleanup that at least attains those requirements that are legally applicable or relevant and appropriate.

- Applicable requirements are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that specifically address a hazardous substance, remedial action, location, or other circumstance found at a CERCLA site.
- Relevant and appropriate requirements are those standards that, while not “applicable,” address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well suited to the particular site. Only those state standards that are more stringent than federal requirements may be applicable or relevant and appropriate.

- To-be-considered criteria are non-promulgated advisories and guidance that are not legally binding, but should be considered in determining the necessary remedial action. For example, to-be-considered criteria may be particularly useful in determining health-based levels where no ARARs exist or in developing the appropriate method for conducting a remedial action.

Chemical-specific ARARs are health- or risk-based numerical values or methodologies which, when applied to site-specific conditions, result in the establishment of numerical values. These values establish an acceptable amount or concentration of a chemical that may remain in, or be discharged to, the ambient environment. Examples of chemical-specific ARARs include maximum contaminant levels (MCLs) under the federal Safe Drinking Water Act and ambient water quality criteria enumerated under the federal Clean Water Act.

Action-specific ARARs are technology- or activity-based requirements or limits on actions taken with respect to a particular hazardous substance. These requirements are triggered by a particular remedial activity, such as discharge of contaminated ground water or in-situ remediation.

Location-specific ARARs are restrictions on hazardous substances or the conduct of the response activities solely based on their location in a special geographic area. Examples include restrictions on activities in wetlands, sensitive habitats and historic places.

Remedial actions are required to comply with the chemical-specific ARARs identified in the ROD. In performing the Five-Year Review for compliance with ARARs, only those ARARs that address the protectiveness of the remedy are reviewed.

Ground Water ARARs

According to the ROD, the ground water ARARs are the National Primary Drinking Water Standards. As shown in Table 5, drinking water standards have only changed for three site contaminants. Two contaminant standards have become less stringent and the chloroform became slightly more stringent. The ground water remediation data at the site indicate that the more stringent ARAR for Chloroform has been met and thus the remedy is still protective.

Table 5: Previous and Current ARARs for Ground Water COCs

COCs	1992 ROD Cleanup Goals (µg/L)	Current (2014) ARAR (µg/L)	ARAR Changes
4,4-DDT	0.158	None	None
Acetone	1,120	None	None
Aldrin	0.00317	None	None
Alpha-BHC	0.00855	None	None
Beryllium	4.00*	4.00	None
Bis (2-Ethylhexyl) Phthalate	6.00*	6.00	None
Carbon Disulfide	47.6	None	None
Chloroform	100*	80	More stringent ^b
Chromium	50*	100	Less stringent
Dieldrin	0.00337	None	None
Gamma- BHC (Lindane)	0.2*	0.2	None
Methylene Chloride	5*	5	None
Nickel	100*	300	Less stringent
Vanadium	78.1	None	None
Vernolate	11.2	None	None
All clean up levels were determined by MCL* or by site specific risk development if no MCL was published. The assumptions made for calculation of the site specific clean up levels are still valid.			
^b The ground water remediation data for the site meets the new ARAR for Chloroform.			

Table 6: Previous and Current ARARs for Surface Soil and Sediments COCs

COCs	1992 ROD Cleanup Goals (µg/L)	Current ARAR (2014) (µg/kg)	ARAR Changes
Benzo (A) Pyrene	94.9	None	None
Benzo (B) Fluoranthene	540	None	None
Benzo (A) Anthracene	1,025	None	None
Carbon Tetrachloride	9,590	None	None
Chrysene	362	None	None
All cleanup goals indicated were developed by site specific risk development. The assumptions made for calculation of the site specific clean up levels are still valid.			

Table 7: Previous and Current ARARs for Subsurface Soil COCs

COCs	1992 ROD Cleanup Goals (µg/kg)	Current ARAR (2014) (µg/kg)	ARAR Changes
4,4'- DDT	566	None	None
Acetone	453*	None	None
Aldrin	640,000*	None	None
Alpha-BHC	2.2*	None	None
Chloroform	70	None	None
Chromium	47,000	None	None
Dieldrin	81*	None	None
Gamma- BHC (Lindane)	3.2	None	None
Methylene Chloride	0.6	None	None
Nickel	30,000	None	None
Vanadium	156,000	None	None
Vernolate	55	None	None
All Cleanup Goals indicated were developed by site specific risk development. *Cleanup Goals revised by site specific risk assessment which was detailed in the 2007 ESD. The assumptions made for calculation of the site specific clean up levels are still valid.			

6.4 Data Review

Soil

The excavation of TLM contaminated soil was executed from December 2007 to June 2008. The excavation program was performed by the removal blocks of soil to predetermined depths based on analytical results from the pre-design investigation. Additional TLM contaminated soil was removed laterally based on visual presence of TLM contaminated soils on excavated sidewalls. Additional soil was excavated from the bottom of pre-determined excavation block depths based on confirmation analysis. Specifically, five-point composite samples were collected at the bottom of each excavation block and analyzed for ROD constituents. If the concentration of any constituent resulted in an exceedance of the 90% Upper Confidence Limit (UCL) average concentration for the Site, then additional soil was excavated and the deeper block bottom was again sampled.

The large majority of the soils excavated from the site contained TLM and were thus removed from the site based on that criterion. The removal of the TLM contaminated soils resulted in the need to only remove a small amount of additional soils to meet the 90% UCL average concentration requirement for soil constituent impacts. In accordance with the cut lines developed from data obtained during the Geoprobe® Investigation, contaminated soil and TLM was removed to the pre-designated cut lines. In

addition, any additional visible TLM was excavated. These visual determination criteria resulted in the excavation of a substantially greater volume of soil than originally anticipated from the initial cut lines. TLM and TLM contaminated soil was disposed of at a Treatment, Storage, and Disposal Facility.

Transportation and storage of the excavated soils was governed by the disposition of the soil as defined by the ARARs which included RCRA. The ROD indicated that the Toxicity Characteristic Leaching Procedure (TCLP) was to be used for determining whether soils are hazardous or non-hazardous. TLM and excavated soil were not considered listed wastes. The Site excavation was backfilled with clean soil and compacted to simulate natural conditions. Re-vegetation was performed using conventional hydroseeding methods to establish a stable stand of vegetation for soil erosion control.

The final excavation volume was greater than the original estimated design volume primarily because: 1) confirmation analysis in certain areas required deeper excavation to meet 90% UCL requirements, and 2) sidewall TLM contaminated soils were much more extensive than previously estimated from pre-design sampling data.

Excavation proceeded to the limits of visual TLM contaminated soil along the complete western, southern and eastern boundaries of the Site property. On a small portion of the property on the northern Site boundary, some visual TLM soil staining was permitted to be left in place due to the proximity of the excavation to the main pressure natural gas line for the City of Saraland. The excavation in this area was terminated approximately 2-ft. from the gas line. Note that even though a small volume of TLM was left in this area, the preponderance of the analytical data from the TLM staging piles indicated low to non-detectable concentrations of ROD constituents in the soil. In summary, the original design excavation volume was 12,300 CY. The final excavation volume was 25,114 CY.

Ground Water

Long-term, post-remediation ground water monitoring was initiated after the completion of the RA in 2008 and was ongoing until late 2012. 4,4-DDT, Acetone, Aldrin, Alpha-BHC, Beryllium, Bis(2-ethylhexyl)phthalate, Carbon Disulfide, Chloroform, Chromium, Dieldrin, Gamma-BHC (Lindane), Methylene Chloride, Nickel, Vanadium and Vernolate are the ground water COCs listed in the ROD. This monitoring program began with the installation of six (6) new monitoring wells (MW-14, MW-15, MW-16, MW-17, MW-18, and MW-19) on-site. Two (2) monitoring wells that existed prior to the remediation were left in place (MW-12U and MW-13U). These eight (8) wells were sampled in September 2008, December 2008, and March 2009 for the following constituents: Sulfate, Chloride, Beryllium (total and dissolved), Total Chromium (total and dissolved), Nickel (total and dissolved), Vanadium (total and dissolved), Total Organic Carbon, Methylene Chloride, Acetone, Carbon Disulfide, Chloroform, Bis(2-ethylhexyl)phthalate, Vernolate, Lindane, Alpha-BHC, 4,4-DDT, Dieldrin and Aldrin.

Three (3) sampling events were initially performed for the on-site monitoring wells and one (1) sampling event for the off-site monitoring wells. Only a few minor exceedances of the ROD clean up criteria were observed with the exception of Vernolate in MW-16. Three (3) off-site wells (MWOS-01, MWOS-02, and MWOS-03) were installed in April 2009; however, they were only sampled and analyzed for Vernolate as it was the only constituent on-site which still exceeded its cleanup goal. Monitoring continued on these three (3) wells and on-site well MW-16 for Vernolate until the ground water cleanup standards were achieved in MW-16, consistent with the Ground water Monitoring Plan specified in this document. No Vernolate was detected in the off-site monitoring wells.

During the March 2010 sampling event both Dieldrin and Vanadium ground water ARARs were met, each previously detected in one monitoring well each out of sixteen total monitoring wells. Following this sampling event, EPA determined that the performance standards for all COCs in ground water except Vernolate had been met. All monitoring wells except MW-16 and the three (3) off-site monitoring wells were abandoned in 2010.

From September 2009 to August 2012, ground water samples were collected to monitor Vernolate concentrations quarterly and exclusively from MW-16 and the three (3) off-site monitoring wells. In September 2012, EPA determined that the cleanup goals for all COCs in the ground water had been met and that the remedy was protective of human health and the environment. With this determination the abandonment of the remaining monitoring wells for the site was approved.

6.5 Site Inspection

No site inspection occurred in conjunction with this FYR. There was a final RA inspection conducted between EPA and ADEM on August 28, 2008. During this final inspection, it was determined that the PRP has constructed the remedy in accordance with the Redwing Remedial Design plans.

6.6 Interviews

No interviews were conducted in conjunction with this FYR.

7.0 Technical Assessment

7.1 Question A: Is the remedy functioning as intended by the decision documents?

The remedial actions are functioning as intended. Contaminated soil and sediment have been removed preventing any further exposures. Ground water monitoring results indicated that the remedial goals established in the ROD have been met.

7.2 Question B: Are the exposure assumptions, toxicity data, cleanup levels and remedial action objectives (RAOs) used at the time of remedy selection still valid?

Yes, the exposure assumptions, toxicity data, cleanup levels and RAOs used at the time of remedy selection are still valid. The ground water standards applied as cleanup goals have not changed. Surface soil cleanup goals were based on risk of inhalation and ingestion and subsurface soil cleanup goals are based on site specific protection of ground water. There have been no changes in the toxicity of the contaminants that would affect the cleanup goals.

7.3 Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

No other information has come to light that could call into question the protectiveness of the remedy.

7.4 Technical Assessment Summary

The remedial actions are functioning as intended. Contaminated soil and sediment have been removed preventing any further exposures. Ground water monitoring results indicated that the remedial goals established in the ROD have been met. The Site does not require any institutional controls since the Site was remediated to residential standards to allow for Unlimited Use and Unrestricted Exposure (UU/UE). The exposure assumptions, toxicity data, cleanup levels and RAOs used at the time of remedy selection are still valid. No other information has come to light that could call into question the protectiveness of the remedy.

8.0 Issues

There are no current site issues.

9.0 Recommendations and Follow-up Actions

There are no recommendations required to address the current site issues.

10.0 Protectiveness Statements

The remedy at the Site is protective of human health and the environment because the surface soil, subsurface soil, sediment and ground water at the Site met performance standards established in the RODs and the Explanation of Significant Difference (ESD).

11.0 Next Review

The policy requirement for the five-year review has been met and will be discontinued. Per EPA's 2001 Five-Year Review guidance, "Five-year reviews may no longer be needed when no hazardous substances, pollutants, or contaminants remain on site above levels that allow for unlimited use or unrestricted exposure" (UU/UE). Since the site is UU/UE and has met the requirements established by the ROD it is not necessary to conduct another FYR. The site is scheduled for deletion from the NPL within the next year.

Appendix A: List of Documents Reviewed

Amended Record of Decision. Redwing Carriers, Inc. (Saraland) NPL Site. EPA ID: ALD980844385. Saraland, AL. Prepared by EPA Region 4. June 14, 2000.

Explanation of Significant Difference. Redwing Carriers, Inc. (Saraland) NPL Site. EPA ID: ALD980844385. Saraland, AL. Prepared by EPA Region 4. September 2007.

Preliminary Closeout Report. Redwing Carriers, Inc. (Saraland) NPL Site. EPA ID: ALD980844385. Saraland, AL. Prepared by EPA Region 4. September 2009.

Record of Decision. Redwing Carriers, Inc. (Saraland) NPL Site. EPA ID: ALD980844385. Saraland, AL. Prepared by EPA Region 4. December 15, 1992.

Remedial Action Report. Redwing Carriers, Inc. (Saraland) NPL Site. EPA ID: ALD980844385. Saraland, AL. Prepared by NewFields. July 2014.

Appendix B: Press Notice



The U.S. Environmental Protection Agency, Region 4 Announces the first Five-Year Review of the Redwing Carrier Superfund Site, Saraland, Mobile County, Alabama

Purpose/Objective: The U.S. Environmental Protection Agency (EPA) is conducting a Five-Year Review of the remedy for the Redwing Carrier Superfund site (the Site) in Saraland, Alabama. The purpose of the Five-Year Review is to ensure that the selected cleanup actions effectively protect human health and the environment.

Site Background: The 5.1-acre site is located in Saraland, a suburb of Mobile County, Alabama. Site surroundings include residential and commercial land uses. Residential areas border the site to the north, south and west. Commercial businesses border the site to the east. From 1961 until 1971, Redwing Carriers, Inc. owned and operated a terminal for cleaning, repairing and parking trucks at the site. Cleaning operations released hazardous substances onto the ground.

In 1973, Saraland Apartments purchased the site property and built an apartment complex subsidized by the U.S. Department of Housing and Urban Development (HUD). Construction activities covered the sludge and contaminated soils with approximately five feet of clean soil. In 1984, ADEM investigated apartment residents' complaints about the tar-like sludge seeping to the surface at numerous locations. In 1990, EPA listed the site on the NPL. The apartment complex was demolished in 2004. The vacant site is fenced and secured. Primary contaminants of concern at the Site include benzo(a)pyrene, benzo(b)fluoranthene, benzo(a)anthracene, carbon tetrachloride and chrysene in the soil and acetone, arsenic and carbon disulfide in the ground water.

Cleanup Actions: EPA designated one operable unit (OU) to address the Site's soil and ground water contamination. EPA signed the Site's Record of Decision (ROD) December 15, 1992, selecting a remedy to dig and haul the Site's soil contamination. The major components of the remedy included temporary relocation of residents, onsite treatment of ground water and monitored natural attenuation of ground water contaminants. The ROD was amended June 14, 2000. The amended plan allowed for demolition, removal and disposal of all buildings, foundations, concrete walkways, and asphalt driveways and parking areas offsite, digging up and treating remaining contamination and offsite disposal, and delaying the ROD requirement for ground water treatment until it was determined to be needed. In 2007, EPA issued an Explanation of Significant Differences to update the soil remediation goals based on new findings during the 1996- 1997 removal actions which indicated that the depth to actual ground water was much greater than previously determined.

Between 1985 and 1994, Redwing Carriers, Inc. conducted periodic cleanups at the site. Beginning in 1996, EPA took over cleanup activities. EPA relocated 57 residents temporarily in 1996 and then permanently in 1997. EPA also dug up and disposed of approximately 20,724 tons of sludge, contaminated soil and debris off site. In 2004, the site's PRPs removed the Saraland

apartment buildings, foundations, concrete walkways, asphalt driveways and parking areas. The PRPs completed soil contamination cleanup activities in 2007 and 2008. PRPs removed a total of 25,114 cubic yards of soil. The PRPs backfilled and graded the dug-up areas and installed six monitoring wells on site. PRPs conducted ground water sampling in 2008. In 2009, the PRPs installed three additional monitoring wells on a property next to the site which concluded the onsite construction for the site. After monitoring until 2011, a review of the sampling results determined that the site remediation had been completed and the ROD requirements full filled.

Five-Year Review Schedule: The National Contingency Plan requires that remedial actions that result in any hazardous substances, pollutants or contaminants remaining at the Site above levels that allow for unlimited use and unrestricted exposure be reviewed every five years to ensure the protection of human health and the environment. While no waste has been left in place on this site it is a policy of Region 4 to complete at least one policy Five Year Review before a site is delisted. The first and only anticipated Five-Year Review for the Site will be completed by September 2014.

EPA Invites Community Participation in the Five-Year Review Process: EPA is conducting this Five-Year Review to evaluate the effectiveness of the Site's remedy and to ensure that the remedy remains protective of human health and the environment. As part of the Five-Year Review process, EPA staff members are available to answer any questions about the Site. Community members who have questions about the Site or the Five-Year Review process are asked to contact:

Shelby Johnston, EPA Remedial Project Manager

Phone: (404) 404-562-8287

E-mail: johnston.shelby@epa.gov

Angela Miller, EPA Community Involvement Coordinator

Phone: (404) 562-8561 /
(800) 435-9233 (toll-free)

E-mail: miller.angela@epa.gov

Mailing Address: U.S. EPA Region 4, 61 Forsyth Street, S.W., 11th Floor, Atlanta, GA 30303-8960

Additional site information is available at the Site's local document repository, located at Saraland Public Library, 111 Saraland Loop, Saraland, AL 36571 and online at:
<http://www.epa.gov/region4/waste/npl/index.htm> - AL.

Appendix C: Interview Form

REDWING CARRIERS, INC.
SUPERFUND SITE

FIVE-YEAR REVIEW
INTERVIEW FORM

Site Name:	<u>Redwing Carriers, Inc.</u>	EPA ID No.:	<u>ALD980844385</u>	
Interviewer Name:	<u>Shelby Johnston</u>	Affiliation:	<u>EPA</u>	
Subject Name:	<u>Ashley Mastin</u>	Affiliation:	<u>ADEM</u>	
Time:		Date:		
Interview Location:				
Interview Format (circle one):	In Person	Phone	Mail	Other: email

Interview Regulator
Category:

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date?
Yes, the Alabama Department of Environmental Management is aware of the former environmental issues and cleanup activities at the Redwing Carriers, Inc. Superfund Site in Saraland, AL.
2. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)?
According to sample data, the Site soil and groundwater has been cleaned up to meet human-health risk-based standards protective of residential receptors at this time. Even though land use controls are not necessary, the site is currently fenced to prevent trespassing, and all wells on site have been plugged and abandoned so there is no access to groundwater. Therefore, ADEM is satisfied with the project.
3. What have been the effects of this Site on the surrounding community, if any?
Prior to remedial activities, the site had apartment housing, so the residents could have been potentially exposed to soil contamination (groundwater exposure was not an issue as residents had a locally-provided treated water source). To prevent exposure, these residents were relocated to other permanent housing, and the vacant buildings were demolished to allow for remedial activities.
4. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing?
At this time, the Department is not aware of any unexpected problems at the Site. As mentioned earlier, the site is fenced with locked gates to prevent trespassing.
5. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site?
How can EPA best provide site-related information in the future?
EPA has provided the Department with appropriate reports and documents regarding the Site thus far. As the Site moves forward into site closure and NPL delisting, public notices, public availability sessions and public comment periods should be provided for public opinion and input.
6. Do you own a private well in addition to or instead of accessing city/municipal water supplies? If so, for what purpose(s) is your private well used?
Not applicable.

Do you have any comments, suggestions or recommendations regarding any aspects of the project?

Appendix D. Site Cleanup Goals

1992 ROD

TABLE 18 - CLEANUP LEVELS FOR SUBSURFACE SOIL

CONTAMINANTS OF CONCERN	CONCENTRATION RANGE (µg/kg)	CLEANUP LEVEL * (µg/kg)
4,4'-DDT **	0.48 - 140	566
ACETONE	3 - 2,300	36
ALDRIN	0.67 - 200	4
ALPHA-BHC	0.1 - 4.7	0.5
CHLOROFORM	4 - 46,000	70
CHROMIUM	2,800 - 52,900	47,000
DIELDRIN	0.57 - 6.3	0.1
GAMMA-BHC (LINDANE)	2.5 - 54	3.2
METHYLENE CHLORIDE	3 - 89	0.6
NICKEL	3,000 - 36,500	30,000
VANADIUM **	1,800 - 50,200	156,000
VERNOLATE	2 - 130,000	55
<p>* Cleanup levels are based on groundwater protection. If <u>lead</u> is detected in subsurface soils not already cited for remediation because cleanup levels above are exceeded, and the concentration of lead is above <u>54,000 µg/kg</u>, then groundwater and soil characterization will be conducted to determine if soil cleanup is required for the protection of groundwater at 15µg/l, the current action level for lead in groundwater.</p> <p>** Concentrations of these site related contaminants were detected above cleanup levels in groundwater during the remedial investigation but not in the subsurface soils. Their current existence in subsurface soils above cleanup levels must be verified.</p>		

TABLE 19 - CLEANUP LEVELS FOR SURFACE SOIL AND SEDIMENTS

CONTAMINANTS OF CONCERN	CONCENTRATION RANGE (µg/kg)	CLEANUP LEVEL (µg/kg) *
BENZO (A) PYRENE	73 - 3,200	94.9
BENZO (B) FLUORANTHENE	230 - 7,400	540
BENZO (A) ANTHRACENE	67 - 7,200	1,025
CARBON TETRACHLORIDE	110,000	9,590
CHRYSENE	93 - 3,800	362
* Based on risk from inhalation or ingestion		

TABLE 20 - CLEANUP LEVELS FOR GROUNDWATER

CONTAMINANTS OF CONCERN	CONCENTRATION RANGE (µg/l)	CLEANUP LEVEL (µg/l) *
4,4'-DDT	0.86	0.158
ACETONE	10,000 - 2,100,000	1,120
ALDRIN	0.11 - 0.47	0.00317
ALPHA-BHC	0.044 - 0.15	0.00855
BERYLLIUM	1.3 - 9.5	4.00
BIS(2-ETHYLHEXYL) PHTHALATE	2 - 710	6.00
CARBON DISULFIDE	9 - 5,500	47.6
CHLOROFORM	2,900 - 27,000	100
CHROMIUM	6.2 - 355	50
DIELDRIN	0.012 - 1.1	.00337
GAMMA - BHC (LINDANE)	0.01 - 0.7	0.2
METHYLENE CHLORIDE	330 - 650	5
NICKEL	28.7 - 301	100
VANADIUM	6.6 - 580	78.1
VERNOLATE	1.1 - 140	11.2
* Based on MCL or Risk Assessment		

2007 ESD Revised Subsurface Clean-up Levels

	1992 ROD Subsurface Soil Cleanup Level (ug/kg)	Revised Subsurface Soil Cleanup Level (ug/kg)
Acetone	36	453
Aldrin	4	640,000
alpha-BHC	0.5	2.2
Dieldrin	0.1	81

(For the purpose of this ESD, "subsurface soil" is defined as the soil encountered at a depth of 2 feet below land surface and extending down to the water table)